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The effect of Social Security benefits on food insecurity at the early retirement age

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Abstract: This study examines the effect of Social Security benefits on labor supply and food security at the early entitlement age (EEA). The data come from the supplements of the Current Population Survey, years 2001 to 2017. The results show that Social Security benefits decreased food insecurity near the EEA, particularly during and after the Great Recession. The effects are evident for both low food security and very low food security and are especially large and robust for widowed householders.

Keywords: Social Security, social insurance, retirement, food insecurity, food-related hardship
JEL Codes: H55, I3

Executive Summary

This project examines the effect of Social Security retirement benefits on food-related hardship at age 62, the earliest entitlement age (EEA) for benefits. Receipt of Social Security retirement benefits spike at age 62, which has been attributed to individuals with limited wealth who are unable to retire before age 62. This implies that individuals who claim benefits at the earliest entitlement age may be more likely to face food-related hardship and that retirement benefits may reduce food-related hardship at age 62 and beyond.

To examine the effect of retirement benefits on food-related hardship, this study measures the change in food-related hardship before and after age 62. The effect should be larger among individuals who are more food insecure and credit constrained before reaching age 62. Additionally, this study measures the effect of Social Security benefits on food-related hardship specifically during and after the Great Recession, when food insecurity increased sharply among individuals aged 50 to 59 years (Gundersen and Ziliak 2021). For this analysis, the data on food-related hardship come from the Current Population Survey (CPS).

The results from the CPS suggest that the prevalence of food insecurity decreases at age 62. The finding is limited to single householders compared married householders and to single, widowed householders compared to single, not widowed householders. The finding is also observed only during and after the Great Recession compared to before the Great Recession. Taken together, the results suggest that, although macroeconomic shocks increase food insecurity among householders nearing retirement, the effect mitigated by the availability of retired worker benefits at age 62.

The study also examines the persistence of food-related hardship at age 62. In contrast to prevalence, which measures any food-related hardship during a specified period, persistence

measures the likelihood of remaining food insecure from one period to the next. To address this question, the study uses longitudinal data from Health and Retirement Study (HRS). In retrospect, the HRS is not ideal for the research question and empirical strategy. First, the HRS is a biennial survey, so food insecurity is measured over longer periods of time. As a result, the food insecurity measures do not correspond precisely with benefit eligibility, potentially obfuscating any effect of the latter on the former. Second, the HRS sample is considerably smaller than the CPS and thus cannot be restricted to narrow demographic categories and time periods without greatly increasing sampling error. Nonetheless, the graphical analysis of food insecurity by survey age is provided.

The results are relevant to policy debates regarding the fiscal insolvency of the Social Security Trust Fund. Some proposals include increases in both the EEA of 62 and the full retirement age (FRA) of 65 to 67 depending on one's year of birth. Other proposals include increases in the FRA only, but with actuarially fair reductions in benefits at the EEA. According to the results from this study, both proposals could lead to greater levels of food insecurity, particularly among widowed households and during economic downturns. One possible policy is to condition benefit eligibility and generosity based on demographic characteristics, particularly widowed status, and the state of the macroeconomy. This is comparable to proposals that exempt certain workers in physically demanding jobs from a higher EEA. Other possibilities include extending eligibility for Supplemental Security Income based on low income and assets from 65 to 62 and offering partial disability benefits through the Social Security Disability Insurance (SSDI) program.

I. Introduction

The US Social Security Trust Fund faces long-term fiscal challenges, with projected expenditures outpacing revenues. Given current policy and trends, the Trust Fund will be depleted by 2034, at which point annual revenues will cover only 76 percent of scheduled benefits (SSA, 2020). To address the impending fiscal crisis, many proposals include an increase in the early entitlement age (EEA), which is currently 62, in tandem with the full retirement age (FRA), which ranges from 65 to 67 depending on one's year of birth (Aaron and Reischauer, 2015; ACSS, 1997; Liebman et al., 2005; NCFRR, 2010; NCRP, 1999).[1] Individuals become eligible for reduced retired-worker benefits and spousal benefits at the EEA and for full benefits at the FRA. In 2019, 25 percent of workers who reached the EEA claimed retirement benefits at that age (Chen and Munnell 2021). The fiscal advantages of increasing the EEA include both a decrease in the duration of benefit receipt and an increase in income and payroll tax revenues through prolonged employment. The tradeoff, however, is that income support would no longer be provided from age 62 up to a new EEA, which many policy proposals and simulations peg at 64 or 65. In theory, the optimal EEA must balance the welfare gains from consumption support against the fiscal consequences of increased benefit expenditures and decreased tax revenues through a decline in labor supply.

To explore these issues, this study examines changes in Social Security benefit receipt, labor supply, and food insecurity, particularly at the EEA. The primary empirical question is whether food insecurity as a measure of wellbeing decreases at the EEA as individuals transition from ineligible to eligible for retired worker and spousal benefits. The empirical analysis utilizes both cross-sectional data from the Current Population Survey's Food Security Supplement and

[1] The list of policy proposals is compiled by Johnson (2018).

longitudinal data from the Health and Retirement Study. The CPS questions pertain to food sufficiency and security, whereas the HRS questions pertain more specifically to sufficiency. Following Gundersen and Ziliak (2018), food insecurity in the CPS is measured at the household level based on the USDA Food Security Survey Module, which includes18 questions in households with children and 10 questions in households without children.[2] The change in food insecurity at the EEA is examined graphically and estimated using linear probability models with flexible controls for age.

The empirical objective is consistent with a large literature in public economics that examines both the moral hazard effects and the welfare gains of social insurance programs.[3] In regards to unemployment insurance, for example, studies examine the effect of benefit generosity on the duration of unemployment (Chetty, 2008; Meyer, 1990) as well as consumption expenditures as a measure of welfare during unemployment (Hamermesh, 1982; Cochrane, 1991; Gruber, 1997; Browning and Crossley, 2001). The focus on consumption follows directly from theoretical work by Baily (1978) and Chetty (2006), who show that the optimal benefit is a function of the average change in consumption across states of employment. Estimating changes in expenditures, however, has led to estimates that are imprecise and unstable, likely due to the difficulty of measuring consumption as well as the relatively small samples for which consumption is measured (Chetty and Finkelstein, 2013). The optimal benefit formula of Baily (1978) and Chetty (2006) also assumes that higher-order derivatives of the

[2] Technical information and statistics are available at https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/survey-tools/.
[3] Krueger and Meyer (2002) review the literature on the labor supply effects of unemployment insurance, disability insurance, and workers' compensation.

utility function with respect to consumption are zero, which may not be plausible at extreme levels of poverty.

In contrast to the focus on consumption expenditures, this study focuses on food insecurity as a measure of wellbeing. First, food insecurity measures a level of subsistence that would not be captured by average expenditures alone. Second, changes in food insecurity at the EEA are not confounded by simultaneous decreases in work-related expenditures as individuals exit the labor market and enter retirement. Third, food expenditures are not subject to "consumption commitments" in comparison to housing, for example, and thus may be more sensitive to contemporaneous income (Chetty and Szeidl, 2007).

If Social Security benefits decrease food insecurity at the EEA, the effect is likely larger during economic downturns.[4] This is especially true for older workers during the Great Recession, who faced job losses, asset losses in the real estate and financial markets, and decreased liquidity in the real estate market. To illustrate the relationship between food insecurity and the macroeconomy, Figure 1 plots the share of householders at ages 55 to 59, just before the EEA, who were food insecure in year 2001 to 2017. The data come from the food security supplement of the Current Population Survey (CPS). The figure shows rates of food insecurity and very low food security. As shown, both measures of food insecurity trended upwards before the Great Recession, but increased precipitously in 2008, the first full year of the Great Recession. From 2007 to 2008, the rate of food insecure increased from 17.3 percent to 19.8 percent, and the rate of very low food security increased from 11.2 percent to 14.8 percent.

[4] Of course, the Great Recession may impact the likelihood of benefit receipt at the EEA. Johnson et al. (2014) find that the rate of benefit claims at 62 decreased during the Great Recession based on data from the Survey of Income and Program Participation.

Given the results from Figure 1, the empirical analysis on Social Security benefits and food insecurity is conducted separately before the Great Recession (years 2001 to 2007) and during and after the Great Recession (years 2008 to 2017). In doing so, the empirical results on Social Security benefits and food insecurity, to be discussed, suggest that food insecurity decreased at the EEA, but only during and after the Great Recession. For example, the rate of very low food security decreased discontinuously at age 62 by approximately 0.94 percentage points, a 6.6 percent drop from a rate of 15.1 percent at age 61. These results suggest that the welfare gains from Social Security benefits at the EEA appear to be important, particularly during economic downturns.

II. Research Methods and Data

The empirical objective is to examine the effect of Social Security benefits on food insecurity. To establish causality, the empirical strategy examines the evolution of benefit receipt and food insecurity by age, with a particular focus on changes near the EEA of 62. The identification assumption is that, in the absence of benefit eligibility at age 62, benefit receipt and food insecurity would evolve smoothly with age. If the identification assumption were true, discrete changes in benefit receipt and food insecurity at age 62 can be attributed to benefit eligibility.

The evolution of benefit receipt and food insecurity by age is first examined graphically, with rates of receipt and food insecurity plotted by age before and after the EEA. The evolution is then measured using linear probability models of benefit receipt and food insecurity as a function of age. To interpret the models, described below, it is important to note that analysis is restricted to ages 64 and below. This avoids having to model the spike in benefit receipt at the full retirement age, which ranges from 65 to 67 depending on one's year of birth.

Three models are considered. The first is given by the following equation:

$$Y = \alpha_0 + \alpha_1 I(A \geq 62) + \alpha_2 I(A \geq 62) * (A - 62) + \alpha_3 (A - 62) + \varepsilon \quad (1)$$

Y is the outcome of interest; A is the age of the analysis unit in years; and $I(.)$ is an indicator variable equaling one if true and zero otherwise. The term $(A - 62)$ controls for a linear trend in age denoted α_3 both before and after age 62; $I(A \geq 62)$ allows for a discrete shift α_1 in level at age 62 relative to the linear trend; and $I(A \geq 62) * (A - 62)$ allows for a discrete shift in slope α_2 at age 62 relative to the linear trend. The model is comparable to the regression kink design, where age is the running variable, age 62 is the threshold for treatment, and both the intercept and slope of the conditional expectation function are allowed to change at the threshold (Card et al., 2015). If the outcome variable would have continued along the linear trend α_3 in the absence of benefit eligibility - the identification assumption described above - then deviations from the trend would be zero. Thus, α_1 and α_2 are interpreted as the causal effects of benefit eligibility.

The model in equation (1) assumes that the trend after age 62 is linear. To relax this assumption, the second model uses fixed effects separately for ages 62, 63, and 64. The model is given by the following equation:

$$Y = \beta_0 + \beta_1 I(A = 62) + \beta_2 I(A = 63) + \beta_3 I(A = 64) + \beta_4 I(A \leq 62) * (A - 62) + \varepsilon \quad (2)$$

The term $I(A \leq 62) * (A - 62)$ controls for a linear trend in age up to and including age 62 denoted β_4. $I(A = 62)$ allows for a discrete shift β_1 in level from the trend at age 62. In this way, β_1 is directly comparable to α_1 in equation (1). Because the linear trend is zero at 62 and beyond,

the coefficients β_2 and β_3 represent shifts in level at 63 and 64, respectively, but relative to the counterfactual at age 62. As a result, these coefficients reflect both the shift due to benefit eligibility as well as the pre-existing trend. To net out of the pre-existing trend, the coefficients β_2 and β_3 are adjusted by $-\beta_4$ and $-2\beta_4$, respectively.

The third model is similar to equation (2), but the pre-existing trend is captured by a second-order polynomial in age. The model is given by the following equation:

$$Y = \gamma_0 + \gamma_1 I(A = 62) + \gamma_2 I(A = 63) + \gamma_3 I(A = 64)$$
$$+\gamma_4 I(A \leq 62) * (A - 62) + \gamma_5 I(A \leq 62) * (A - 62)^2 + \varepsilon \quad (3)$$

As before, γ_1 is directly comparable to α_1 in equation (1). In this case, however, the estimates γ_2 and γ_3 are adjusted by $-(\gamma_4 + \gamma_5)$ and $-(2\gamma_4 + 4\gamma_5)$, respectively.

In all three models, ε is the structural error term, which is clustered by age. Clustering by the running variable is recommended in regression discontinuity models where the running variable is discrete rather than continuous (Lee and Card, 2006).

The data for these models come from the supplements of Current Population Survey. The annual demographic supplement, conducted in March, contains information on labor supply and Social Security benefits. The food security supplement, conducted annually in December since 2001, contains information on food insecurity at the household level. Both surveys are representative of the civilian, non-institutionalized US population aged 16 and over. The data come specifically from survey years 2001 to 2017.

Using the food security supplement, 12-month measures of food insecurity are constructed based on 18 survey questions (Bickel et al., 2000). These questions are posed only to

households who are at risk of food insecurity based on pre-screen questions. Households are deemed at risk if they are below 185% of the poverty line, report not having enough food or not having the kinds of food they want to eat, or report having run short on money and trying to make food or money go further. Households who are not at risk of food insecurity are deemed food secure. At-risk households are asked up to 18 survey questions that are indicative of food insecurity pertaining to the last 12 months prior to the survey. Based on their responses, households are categorized as either food secure or food insecure, where households that are food insecure are further categorized into those with very low food security. Following Gundersen and Ziliak (2018), the analyses for this study examine rates of food insecurity and rates of very low food security, where the former is inclusive of households with very low food security. These definitions of food insecurity are consistent with the post-2006 definitions outlined by the United States Department of Agriculture.[5]

Because food insecurity is measured at the household level, the unit of analysis in equations (1) to (3) is the household rather than the individual. This raises the question of which age to use for the running variable among couples, as most individuals in couples are not the same age. Among household couples in the pooled food security sample, just 13.5 percent of the couples included individuals of the same age. Unless otherwise noted, the age variable among couples is defined by the oldest person, so eligibility for Social Security benefits is defined by the first person to reach the EEA of 62.[6] This seems reasonable if food insecure couples claim

[5] Households with children are asked 18 questions, and households without children are asked 10 questions. The threshold for food insecurity is at least three indicative responses with or without children. The threshold for very low food security is eight indicative responses with children and six indicative responses without children.

[6] The analysis is repeated using the male's age for married householders. The results are qualitatively similar to the results presented here.

benefits upon first eligibility. If the oldest person does not qualify for retired worker benefits based on his or her own earnings record, he or she could still be eligible for spousal benefits at the EEA. Among 48.9 percent of couples in the sample, the oldest person is also the survey respondent for the household. Among 73.6 percent of couples, the oldest person is male.

A limitation of the data is that food insecurity is measured during the last 12 months of the survey, whereas benefit eligibility is based on the age of the householder at the time of the survey. If the householder turns 62 in December, for example, he or she would be considered eligible for retirement or spousal benefits according to equations (1) to (3), but food insecurity as the outcome variable would be measured when the respondent was not eligible for retirement or spousal benefits. Thus, food insecurity at age 62 reflects periods both before and after the EEA, whereas food insecurity at 63 reflects periods only after the EEA. This should be considered when interpreting the results from equations (1) to (3).

The identification strategy assumes that, in the absence of benefit eligibility, benefit receipt and food insecurity would have evolved smoothly with age. This assumption seems reasonable given that both observable and unobservable characteristics likely evolve smoothly with age and that other major programs such as Medicare and Medicaid have different age cutoffs for eligibility. To examine the smoothness of observable characteristics, Figure 2 plots the share of key observable characteristics – male, white, married, widowed, no high school diploma, high school diploma only, and some college or more – by age using the sample from the food security supplement. As shown, the shares do not appear to change sharply at the cutoff, which supports the identification strategy. Using linear model in equation (1), the only statistically significant (at the five percent level) discontinuity is for the share widowed, which decreases by 0.67 percentage points. Nevertheless, the models include these control variables for

sex, race, marital status, and educational attainment, as well as calendar-year fixed effects and year-of-birth fixed effects. By including year-of-birth fixed effects, identification comes from within-cohort trends in benefit receipt and food insecurity, rather than across.

The models also assume functional forms for the evolution of benefit receipt and food insecurity before age 62. The functional form, combined with the age range used for estimation, impacts the estimated deviations from the pre-existing trend at age 62 and after. In equations (1) to (2), the pre-trend is assumed linear, which is a reasonable approximation with a narrow bandwidth in age. For this reason, the sample is restricted to ages 55 to 64. In equation (3), the pre-trend is more flexible, allowing for a broader bandwidth in age. In this case, the sample is restricted to ages 50 to 64. By estimating the three models, it is possible to assess the sensitivity of the estimates to model and sample specifications.

Although equations (1) to (3) are comparable to regression discontinuity and kink models, they differ with respect to the underlying mechanism and thus interpretation. In the regression discontinuity model, for example, the conditional expectation function to the left of a treatment cutoff is the counterfactual for the right (Hahn et al., 2001; Imbens and Lemieux, 2008), premised on potential outcomes in treated and untreated states (Holland, 1986; Rubin, 1974). This framework is not necessarily applicable in the current context, since eligibility for Social Security benefits is based on age, which is anticipated. Thus, changes in labor supply and consumption at age 62 reflect intertemporal substitution between states of benefit ineligibility and eligibility, not necessarily "causal effects" defined by the potential outcomes framework.

In the current context, however, this differentiation may be moot. The reason is that households should prefer a stable path of consumption, but this may not be possible for food insecure households who lack precautionary savings or face liquidity or borrowing constraints

(Zeldes, 1974). In such circumstances, consumption is likely highly correlated with contemporaneous income. If so, consumption just before 62 likely reflects counterfactual consumption just after 62 in the absence of benefit eligibility. In fact, consumption smoothing, to the extent possible, would bias against finding decreases in food insecurity at age 62.

III. Results

A. Benefit Receipt and Labor Supply

The labor supply effects of Social Security benefits are examined in Figure 3. The first panel plots rates of Social Security benefit receipt by age, and the second panel plots rates of labor force participation by age. The vertical line is located at the EEA of 62. Given the sharp increase in food insecurity during the Great Recession (Figure 1), the analysis is conducted separately before the Great Recession (years 2001 to 2007) and during and after the Great Recession (years 2008 to 2017).

As shown, the EEA is associated with a discontinuous increase in Social Security benefit receipt and a discontinuous decrease in labor supply. Benefit receipt trended upwards before the EEA - which is possible due to disabled widow benefits starting at age 50, widow benefits starting at age 60, and disabled worker benefits - then increased discontinuously at the EEA.[7] In the post-recession period, benefit receipt increased from 14.0 percent at age 61 to 25.5 percent at age 62. Conversely, measures of labor supply trended downwards before the EEA, then

[7] In December 2020, for example, there were 496,481 SSDI beneficiaries at age 60, 41,251 non-disabled widow(er) beneficiaries at age 60, and 24,226 disabled widow(er) beneficiaries at age 60 (SSA 2020). Disabled widow and widow benefits are based on earnings record of the deceased spouse. If the deceased spouse received reduced benefits, the disabled widow and widow benefit is based on the reduced amount. Disabled widow and widow benefits are further reduced if claimed before the FRA.

decreased discontinuously at the EEA. In the post-recession period, labor force participation decreased from 64.9 percent at age 61 to 58.8 percent at age 62.

Notably, the changes in benefit receipt and labor supply at the EEA appear smaller in the post-recession period compared to the pre-recession period. The results for benefit receipt are consistent with Johnson et al. (2014), who find that the rate of benefit claims at 62 decreased during the Great Recession based on data from the Survey of Income and Program Participation.

Table 1 presents estimates of benefit receipt and labor supply using equations (1) to (3). The column panels labeled A and B correspond to the two outcome variables, and the columns within each panel correspond to the three models. The row panels labeled I and II correspond to the pre- and post-recession periods, respectively.

The results in Table 1 are consistent with the trends illustrated in Figure 3. Column (1) of panel A presents estimates of Social Security benefit receipt using equation (1). According to the coefficient $\hat{\alpha}_1$ for $I(A \geq 62)$, the EEA is associated with a precipitous increase in benefit receipt. The increase was 19.1 and 11.6 percentage points in the pre- and post-recession periods, respectively. Moreover, according to the coefficient $\hat{\alpha}_2$ for $I(A \geq 62) * (A - 62)$, the slope of the linear trend also increased at the EEA. The increase in the slope was 8.6 and 7.4 percentage points in the pre- and post-recession periods, respectively. By age 64 in the post recession period, for example, benefit receipt increased by an additional 26.5 percentage points relative to the pre-existing linear trend.

The qualitative results from equation (1) are robust to alternative model and empirical specifications reported in columns (2) and (3). First, the coefficient $\hat{\alpha}_1$ for $I(A \geq 62)$ is directly comparable to the coefficients $\hat{\beta}_1$ and $\hat{\gamma}_1$ for $I(A = 62)$ in columns (2) and (3), respectively. As shown, all three models predict a discontinuous increase in benefit receipt at the EEA, though the

estimated discontinuities are slightly smaller with more flexible functional form assumptions in equations (2) and (3) compared to equation (1). Second, the combined coefficients for $I(A = 62)$ and $I(A \geq 62) * (A - 62)$ in column (1) are directly comparable to the coefficients reported for $I(A = 63)$ and $I(A = 64)$ in columns (2) and (3). To make comparison easier, the coefficients reported for $I(A = 63)$ and $I(A = 64)$ are adjusted for the pre-existing trend in benefit receipt. (The table presents the F-statistic for the adjusted estimates in brackets.) Stated above, by age 64 in the post recession period, the estimated rate of benefit receipt was 26.5 percentage points higher relative to the pre-existing linear trend before the EEA, calculated as $\hat{\alpha}_1 + 2\hat{\alpha}_2$. In comparison to columns (2) and (3), the estimated increase in benefit receipt at 64 is 25.8 and 25.0 percentage points, respectively. The former is calculated as $\hat{\beta}_3 - 2\hat{\beta}_4$, and the latter is calculated as $\hat{\gamma}_3 - 2\hat{\gamma}_4 - 4\hat{\gamma}_5$. Thus, the estimated effect of the EEA on benefit receipt is similar across all three models.

Panels B reports the results for labor force participation. As shown in column (1), the EEA is associated with a decrease in labor supply relative to the pre-existing linear trend. This is evident by both a discontinuous decrease at age 62, given by the coefficient $\hat{\alpha}_1$ for $I(A \geq 62)$, as well as a more negative slope after age 62, given by the coefficient $\hat{\alpha}_2$ for $I(A \geq 62) * (A - 62)$. As before, the qualitative results in columns (1) are robust to alternative model and empirical specifications reported in columns (2) and (3). Consistent with Figure 3, the changes in labor supply at the EEA are smaller in magnitude than the changes in benefit receipt.

B. Food Insecurity

The welfare effects of Social Security benefits are examined in Figure 4. The panels plot rates of food insecurity by age, showing those living in food insecure households and the subset living in

households with very low food security. The solid vertical line is located at the EEA of 62, and the dashed vertical line is located at age 63. Stated above, food insecurity at age 62 reflects periods both before and after the EEA, whereas food insecurity at 63 reflects periods only after the EEA. As before, the analysis is conducted separately before and after the Great Recession.

Overall, Figure 4 suggests that Social Security benefits decreased food insecurity at the EEA and beyond, particularly in the post-recession period. First, although the Great Recession is associated with higher rates of food insecurity at all ages, the increase in food insecurity appears systemically greater below the EEA than above the EEA. Second, in the post-recession period, food insecurity appears to decrease discontinuously upon reaching the EEA. This is most visually apparent in the second panel which plots very low food security. In contrast, food insecurity did not change systematically at the EEA in the pre-recession period.

Table 2 presents estimates of food insecurity using equations (1) to (3), similar to Table 1. The results are consistent with the qualitative results from Figure 4. First, food insecurity did not change at the EEA in the pre-recession period (Panel I). Second, food insecurity decreased discontinuously at the EEA in the post-recession period (Panel II). In column (1), for example, food insecurity decreased by 0.70 percentage points, and very low food security decreased by 0.94 percentage points. These decreases persisted to ages 63 and 64, but gap did not widen relative to the pre-existing linear trend according to the coefficient $\hat{\alpha}_2$ for $I(A \geq 62) * (A - 62)$. Taken together, the results suggest that Social Security benefits decreased food insecurity near the EEA, but only during and after the Great Recession.

C. Food Insecurity by Marital Status

An important consideration is whether the effects of Social Security benefits on food insecurity differ by marital status. One reason is that couples can smooth consumption against shocks through spousal labor supply (Cullen and Gruber, 2000; Lundberg, 1985; Wu and Krueger, 2020). Another reason is that food insecurity is measured at the household level, and the age variable among couples is defined by the oldest person. These factors introduce additional measurement error for couples relative to singles. Both reasons would suggest that the change in food insecurity at the EEA should be more evident among householders who are not married. Given the baseline results, the analysis by marital status is restricted to the post-recession period.

Figure 5 plots rates of food insecurity by age and marital status, and Table 3 presents estimates of food insecurity using equations (1) to (3). As the figure shows, rates of food insecurity were considerably higher among householders who are not married both before and after the EEA. Moreover, both the figure and table indicate that the effect of Social Security benefits on food insecurity is evident only for householders who are not married. The results for not-married householders are reported in panel II of Table 3. According to column (1) of panels A and B, the rate of food insecurity decreased by 2.46 percentage points at age 62, and rate of very low food security decreased by 2.15 percentage points at age 62. Taken together, the results indicate that not-married householders experienced much greater rates of food insecurity, which was tempered to some extent by Social Security benefits near the EEA.

D. Food Insecurity by Education among Not Married Householders

Another consideration is whether the effects of Social Security benefits on food insecurity differ by socioeconomic status, proxied by educational attainment. Educational attainment is categorized as less than a high school diploma, high school diploma only, and some

college or more. The analysis is restricted to not-married householders during the post-recession period, who in the preceding analysis exhibited the greatest decrease in food insecurity at the EEA.

Figure 6 plots rates of food insecurity by age and educational attainment, and Table 4 presents estimates of food insecurity using equations (1) to (3). As shown, the discontinuous decrease is most apparent among householders who are not married and have a high school diploma only or some college or more. In column (1) of panel B, for example, the rate of very low food security decreased by 2.46 percentage points among those with a high school diploma only and by 2.57 percentage points among those with some college or more. In contrast, the rate of very low food security increased by 0.17 among those with less than a high school diploma, though the standard errors are large due to a considerably smaller sample. The statistical imprecision is also evident columns (2) and (3), where the coefficients on the age fixed effects vary substantially with respect to sign, magnitude, and statistical significance.

E. Food Insecurity by Widow Status among Not Married Householders

Another consideration for not-married householders is whether the effects of Social Security benefits on food insecurity differ by widowed status. Both widowed and non-widowed householders may qualify for worker benefits based on one's own earnings history; however, in contrast to non-widowed householders, widowed householders may also qualify for disabled widow benefits at age 50 and widow benefits at age 60. Again, the analysis is restricted to not-married householders and to the post-recession period.

Figure 7 plots rates of food insecurity by age and widowed status, and Table 5 presents estimates of food insecurity using equations (1) to (3). The first consideration is the discontinuous decrease in food insecurity at the EEA. According to Table 5, this decrease is

evident regardless of widowed status. In column 1 of panel A, for example, food insecurity decreased by 2.53 percentage points among widowed householders and 2.35 percentage points among not-married, not-widowed householders. These decreases, however, persisted to ages 63 and 64 only among widowed householders, which is most evident in columns (2) and (3) in panels A and B. In fact, the decrease in food insecurity at age 62 among non-married, not-widowed householders appears to be a negative outlier, as shown in Figure 7. Taken together, the results suggest that the negative effect of Social Security benefits on food insecurity is evident especially for widowed householders.

F. Health and Retirement Study

A similar analysis is conducted using the Health and Retirement Study (HRS). The HRS is a biennial survey of older Americans that contains two food-security questions in survey years 2002 to 2016. The first question asks whether, in the last two years, the survey respondent always had enough money to buy food they needed. The second question asks whether, in the last two years, the survey respondent skipped meals or had eaten less than they felt they should because there was not enough food in the house. Importantly, the second question is not posed to households who answer affirmatively to the first question. Because the data are longitudinal, they are used to measure both the prevalence and persistence of food insufficiency, where the former is defined as two consecutive reports of not having enough money or having skipped meals or eaten less. The persistence measures cannot be calculated in 2002 since the food insecurity data are not available in survey year 2000.

Figure 8 illustrates the prevalence and persistence of the food insecurity measures by the age of the oldest householder. The solid vertical line corresponds to survey age 62, and the

dashed vertical line corresponds to survey age 63. As shown, the prevalence and persistence of food insecurity decreases with age, consistent with the prevalence of food insecurity using the CPS illustrated in Figure 3. In contrast to the CPS, however, neither the prevalence nor the persistence of food insecurity decreases precipitously at age 62. While the prevalence measure of food insecurity appears to decrease sharply in 63, this appears to be an outlier due to statistical noise rather than a systemic decline. One reason for no apparent effect is that food insecurity in the HRS is measured over a longer period: the prevalence is measured over the past two years, and persistence is measured over the last four years. This means that survey age 64 is the youngest age in which the persistence of food insecurity is measured entirely after the EEA. Additionally, the HRS sample is considerably smaller than the CPS and thus cannot be restricted to narrow demographic categories and time periods without greatly increasing the sampling error. For these reasons, the HRS data are not ideal for the empirical strategy employed in this study.

IV. Discussion and Conclusion

This study examines the effects of Social Security benefits on labor supply and food insecurity, particularly at the EEA. The receipt of Social Security benefits spikes at the EEA, as shown in this study and others (Hurd 1990, Ruhm 1995, Rust and Phelan 1997). As this study further shows, the spike in receipt is associated with a decrease in labor force participation, on one hand, and a decrease in the rate of food insecurity and very low food security, on the other. The negative effect on food insecurity is evident particularly for widowed householders during and shortly after the Great Recession. This suggests that the welfare gains due to benefit eligibility may be substantial, particularly among widowed householders near the EEA. An important strength of the empirical strategy is that it cleanly identifies the effect of social

security benefits on food insecurity at the EEA. A limitation is that it cannot identify the effect of social security benefits on food insecurity beyond the EEA, which is important for understanding the welfare effects of social security benefits more comprehensively.

The findings contribute to the literature on the effects of food assistance programs on food insecurity. For example, Gundersen et al. (2017) argue that the Supplemental Nutrition Assistance Program decreases food insecurity by 5 to 20 percentage points. Additionally, Gundersen, Kreider, and Pepper (2012) find that the National School Lunch Program decreases the prevalence of food insecurity among households with children in school by 2.3 to 9.0 percentage points. This study shows that other transfer programs may have a meaningful impact on food insecurity, including retirement benefits, disability benefits, the earned income tax credit, and the child tax credit. This is an important direction for future research.

Additionally, the results are relevant to policy debates regarding the fiscal insolvency of the Social Security Trust Fund. Some proposals include increases in both the EEA of 62 and the FRA of 65 to 67 depending on one's year of birth. Other proposals include increases in the FRA only, but with actuarially fair reductions in benefits at the EEA. According to the results from this study, both proposals could lead to greater levels of food insecurity. One possibility is to condition benefit eligibility and generosity based on demographic characteristics, particularly widowed status, and the state of the macroeconomy. This is comparable to proposals that exempt certain workers in physically demanding jobs from a higher EEA (Turner, 2011). Other possibilities include extending eligibility for Supplemental Security Income based on low income and assets from 65 to 62, offering partial disability benefits through the Social Security Disability Insurance (SSDI) program (Johnson, 2018), and increasing the eligibility and generosity of benefits through the Supplemental Nutrition Assistance Program. As several

studies show, a decrease in benefit eligibility and generosity at age 62 may induce some workers to apply for full benefits through the SSDI program, increasing benefit expenditures (Bound et al., 2010; Duggan et al., 2007; Li and Maestas, 2008).

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